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EXAMINER	
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ART UNIT	PAPER NUMBER
1644	21

DATE MAILED: 02/18/00

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Below is a communication from the EXAMINER in charge of this application

COMMISSIONER OF PATENTS AND TRADEMARKS

ADVISORY ACTION

☐ THE PERIOD FOR RESPONSE:

a) ☐ is extended to run _____ or continues to run _____ from the date of the final rejection

b) ☐ expires three months from the date of the final rejection or as of the mailing date of this Advisory Action, whichever is later. In no event however, will the statutory period for the response expire later than six months from the date of the final rejection.

Any extension of time must be obtained by filing a petition under 37 CFR 1.136(a), the proposed response and the appropriate fee. The date on which the response, the petition , and the fee have been filed is the date of the response and also the date for the purposes of determining the period of extension and the corresponding amount of the fee. Any extension fee pursuant to 37 CFR 1.17 will be calculated from the date of the originally set shortened statutory period for response or as set forth in b) above.

☑ Appellant's Brief is due in accordance with 37 CFR 1.192(a).

☑ Applicant's response to the final rejection, filed 2/4/00 has been considered with the following effect, but it is not deemed to place the application in condition for allowance:

1. ☐ The proposed amendments to the claim and /or specification will not be entered and the final rejection stands because:

   a. ☐ There is no convincing showing under 37 CFR 1.116(b) why the proposed amendment is necessary and was not earlier presented.

   b. ☐ They raise new issues that would require further consideration and/or search. (See Note).

   c. ☐ They raise the issue of new matter. (See Note).

   d. ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal.

   e. ☐ They present additional claims without cancelling a corresponding number of finally rejected claims.

   NOTE: _____

2. ☐ Newly proposed or amended claims _____ would be allowed if submitted in a separately filed amendment cancelling the non-allowable claims.

3. ☑ Upon the filing an appeal, the proposed amendment ☑ will be entered ☐ will not be entered and the status of the claims will be as follows:

   Claims allowed: _____
   Claims objected to: _____
   Claims rejected: 71-73, 75-78, 80-82 AND NEWLY ADDED 99 (CLAIM NUMBERED 1 S 83) RULE 1.126

   However;

   ☐ Applicant's response has overcome the following rejection(s): _____

4. ☑ The affidavit, exhibit or request for reconsideration has been considered but does not overcome the rejection because FOR THE REASONS OF RECORD. SUFFICIENT MOTIVATION AND EXPECTATION IN THE PRIOR ART; NEWLY ADDED CLAIM 99 IS REJECTED UNDER BOTH 102 AND 103

5. ☐ The affidavit or exhibit will not be considered because applicant has not shown good and sufficent reasons why it was not earlier presented. REJECTION OF RECORD (SEE SECTIONS 7+8 OF PAPER NO: 17)

☐ The proposed drawing correction ☐ has ☐ has not been approved by the examiner.

☐ Other PHILLIP GAMBEL
PRIMARY EXAMINER
TECH CENTER 1600
ART UNIT 1644
2/15/00

PTOL-303 (REV. 5-89)

DETAILED ACTION

1. Since this application is eligible for the transitional procedure of 37 CFR 1.129(a), and the fee set forth in 37 CFR 1.17(r) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.129(a).

Applicant's second submission after final filed on 9/5/00 (Paper No. 23) has been entered.

Applicant's amendment, 10/12/00 (Paper No. 26), is acknowledged.
Claims 71 and 76 have been amended.

Claims 71-73, 75-78, 80-82 and 99 are pending and being acted upon presently

Claims 1-70, 74, 79, 83-98 have been canceled previously.

2. Formal drawings and photographs have been submitted which fail to comply with 37 CFR 1.84. Please see the form PTO-948 previously sent in Paper No. 6.

3. The application is required to be reviewed and all spelling, TRADEMARKS, and like errors corrected.

Trademarks should be capitalized or accompanied by the ™ or ® symbol wherever they appear and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the trademarks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate corrections are required

4. The following is a quotation of the first paragraph of 35 U.S.C. § 112:
The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 80-82 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "purified or isolated ICAM-1" which is bound by the RR-1 (see deposit requirement under 35 USC 112, first paragraph, herein) or defined by the amino acids of Figure 8; does not reasonably provide enablement for any "purified or isolated ICAM". The specification does not enable any person skilled in the art to which it pertains, or with which it is most clearly connected, to make and use the invention commensurate in scope with these claims.

Applicant has not provided sufficient biochemical information (e.g. molecular weight, amino acid composition, N-terminal sequence, etc.) that distinctly identifies ICAM other than ICAM bound by the RR-1 (see deposit requirement under 35 USC 112, first paragraph, herein) or defined by the amino acids of Figure 8.

"It is not sufficient to define the recombinant molecule by its principal biological activity, e.g. having protein A activity, because an alleged conception having no more specificity than that is simply a wish to know the identity of any material with that biological property." Colbert v. Lofdahl, 21 USPQ2d, 1068, 1071 (BPAI 1992).

While ICAM is an adhesion molecule which is capable of binding to LFA-1, MAC-1 or p150,95; there are a number of distinct adhesion molecules as well as distinct ICAM molecules, which encompass overlapping structural and functional attributes.

Reasonable correlation must exist between the scope of the claims and scope of enablement set forth. Without sufficient guidance, making and using ICAM-1 with the functional adhesion molecule properties at the time the invention was made, while providing or maintaining the claimed activity would be unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue in the absence of defining biochemical or enabling information.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. Claims 71-73, 75-78, 80-82 and 99:

It is apparent that the RR1/1 antibody is required to practice the claimed invention. As a required element, it must be known and readily available to the public or obtainable by a repeatable method set forth in the specification. If it is not so obtainable or available, the enablement requirements of 35 USC 112, first paragraph, may be satisfied by a deposit of the cell line / hybridoma which produces this antibody. See 37 CFR 1.801-1.809.

In addition to the conditions under the Budapest Treaty, applicant is required to satisfy that all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of a patent in U.S. patent applications.

Amendment of the specification to recite the date of deposit and the complete name and address of the depository is required. As an additional means for completing the record, applicant may submit a copy of the contract with the depository for deposit and maintenance of each deposit.

If the original deposit is made after the effective filing date of an application for patent, the applicant should promptly submit a verified statement from a person in a position to corroborate the fact, and should state, that the biological material which is deposited is a biological material specifically identified in the application as filed, except if the person is an attorney or agent registered to practice before the Office, in which the case the statement need not be verified. See MPEP 1.804(b).

Applicant should note that the limitation of the RR/1 antibody is set forth in the scope rejection under 35 USC 112, first paragraph above.

If applicant amends the claims to rely upon the sequence in Figure 8; then the deposit requirement for the RR/1 antibody would be obviated.

7. Claim 75-78 and 80-82 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A) At the time the invention was made or priority relied upon (e.g. USSN 07/405,963, filed 5/4/87); claims 80-82 are indefinite in that they only describe the compositions of interest by an arbitrary protein name. While the name itself may have some notion of the activity of the protein, there is nothing in the claims which distinctly claims the protein and variants thereof. For example, others in the field may isolate the same protein and give such an entirely different name. Applicant should particularly point out and distinctly claim "ICAM-1" by claiming characteristics associated with the protein (e.g. amino acid composition, specifically bound by a deposited antibody,; e.g. RR/1). Claiming biochemical molecules by a particular name given to the protein by various workers in the field fails to distinctly claim what that protein is and what the compositions are made up of.

B) With respect to claims 75-78 and in consideration of the discrepancies often encountered in the art between protein molecular weight when determined by different methods, when a molecular weight is recited to characterize a protein the claims should include not only the method by which it was determined, e.g. whether by sodium dodecyl sulphate polyacrylamide gel electrophoresis, gel filtration or some other method, but also whether the determination was made under denaturing or non-denaturing conditions and whether reducing or non-reducing conditions were are used.

C) Applicant should specifically point out the support for any amendments made to the disclosure. See MPEP 714.02 and 2163.06

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CAR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 71-73, 75-78, 80-82 and 99 are rejected under 35 U.S.C. § 102(b) as being anticipated by Tomassini (PhD Dissertation, 1986; of record) for the reasons of record.

Tomassini teaches the isolation and characterization of the human rhinovirus receptor, including various cell and membrane preparations (see entire document).

11. Claim 71-73, 75-78, 80-81 and 99 are rejected under 35 U.S.C. § 102(b) as being anticipated by Tomassini et al. (J. Virol. 58: 290-295, 1986; of record)for the reasons of record.

Tomassini teaches the isolation characterization of the human rhinovirus receptor, including cellular and membrane preparations (see entire document).

12. Claim 71-73, 75-78, 80-81 and 99 are rejected under 35 U.S.C. § 102(b) as being anticipated by Colonno et al. (Virus Attachment and Entry into Cells, Proceedings of an ASM Conference held in Philadelphia, PA, April 10-13, 1985).

Colonno et al. Teach the characterization of the cellular receptor specific for attachment of most human rhinovirus serotypes, including cellular and membrane preparations (see entire document, including pages 112-115).

Applicant is reminded that no more of the reference is required than that it sets forth the substance of the invention. The claimed functional limitations would be inherent properties of the referenced rhinovirus receptor.

The products of the instant claims and the prior art are defined in terms of physical characteristics. Comparison of the instant products with prior art is difficult since the Office is not equipped to manufacture the claimed product and/or prior art products that appear to be related and conduct comparisons. Also, it is noted that differences or variations were known in the art at the time the invention was made when protein molecular weight was determined by different methods and conditions.

The burden is on the applicant to establish a patentable distinction between the claimed and referenced products. See In re Best, 195 USPQ 430, 433 (CCPA 1977); In re Marosi, 218 USPQ 289, 292-293 (Fed. Cir. 1983); In re Fitzgerald et al., 205 USPQ 594 (CCPA 1980).

13. Claims 71-73, 75-78, 80-81 and 99 80-82 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tomassini (PhD Dissertation, 1986; of record) AND/OR Tomassini et al. (J. Virol. 58: 290-295, 1986; of record) AND/OR Colonno et al. (Virus Attachment and Entry into Cells, Proceedings of an ASM Conference held in Philadelphia, PA, April 10-13, 1985) OR Tomassini (PhD Dissertation, 1986; of record) in view of the art known use of artificial membranes for a variety of uses in protein chemistry at the time the invention was made and to isolate and produce functional active proteins.

Tomassini (PhD Dissertation, 1986), Tomassini et al. (J. Virol., 1986) and Colonno et al. (Virus Attachment and Entry into Cells) are all taught above.

These references do not teach the use of artificial lipid membranes per se.

However, providing proteins of interest in artificial lipid membranes in a variety of means for a variety of purposes for the characterization and determination of the structure-function of a protein of interest was well known and practiced at the time the invention was made.

Also, it is noted that "artificial lipid membranes" has broad meaning; given the prosecution of the instant application and applicant's assertion that is irrelevant whether HRRP or ICAM-1 when associated with detergents meets the claimed limitation of artificial lipid membranes (see applicant's amendment filed 2/4/00; Paper No. 20; page 6).

It is noted the prior art teaches the isolation and characterization of the rhinovirus receptor which reads on the claimed ICAM-1 preparations.

Given applicant's arguments that the prior art isolated prior art rhinovirus receptor may not have the properties of binding LFA-1/Mac-1/p150,95; it is noted that prior art rhinovirus receptor is clearly identified as being the receptor for rhinovirus receptor.

Given this clear teaching and the clear motivation of the ordinary artisan to characterize this protein further, as taught by the each reference; the ordinary artisan would have been able to isolate and characterize the HRV receptor with the known and desired functional properties, such as HRV binding.

The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See MPEP 2144.

Although the prior art may not known that the HRV receptor also had the ability to bind to LFA-1/Mac-1/p150,95; these adhesion molecule properties would have been expected properties given the isolation of a functional HRV receptor with ability to bind HRV.

One of ordinary skill in the art at the time the invention was made would have been motivated to isolate and characterize the structure-function nature of the HRV receptor, including the art known use of artificial lipid membranes; given its clear importance in rhinovirus attachment and infection. From the teachings of the references, it was apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

14. Applicant's arguments in conjunction with the Rothlein Declaration under 37 CFR 1.132, 10/12/00 (Paper Nos. 26/27), have been fully considered but not found convincing.

Applicant argues in conjunction with the Rothlein Declaration that the Tomassini purified HRRP is not able to bind HRV (e.g. see page 46 of the Tomassini PhD Thesis).

It is noted that any disruption in structure from the purification procedure leading to the elimination of HRV binding would also reduce or eliminate LFA-1 binding.

However, it is noted that in characterizing the HRV receptor, Tomassini et al. teach the isolation of the cellular receptors can be achieved by several methods, including but not limited to detergent treatment (page 113). Tomassini et al. clearly teach that the vast number of HRV serotypes use this HRV receptor for attachment, as determined by competition and functional assays (page 113).

While the thesis indicates that repeated attempts to use radiolabeled HRV in place of receptor antibody in the RIA gave inconclusive results owing to poor virus binding; it is not clear the conditions of the assay or the functional attributes of the radiolabeled receptor, since the data or details are not provided (page 44, paragraph 1).

However, immunoaffinity purification did further purify the HRV receptor, wherein said HRV receptor was bound by specific antibody, wherein said anti-HRV antibody could block HRV attachment and that the HRV receptor could be used as an immunogen to generate antisera which selectively inhibit HRV attachment to susceptible cells tested by both membrane binding and cell protection assays (pages 50-69).

Therefore, the thesis clearly states that the HRV receptor is utilized by the major groups of HRVs during attachment to cells (page 65, and Discussion on pages 107-118). Additional biochemical studies (pages 69-83) as well as initial cloning of the HRV receptor (pages 83-105) are also disclosed.

Further, applicant has failed to rebut prima facie showing of inherency or obviousness absent objective evidence such as side-by-side testing that would address the ability of the prior art HRV receptors ability to bind LFA-1/Mac-1/p150,95. See Ex parte Raske, 28 USPQ2d 1304 (BPAI 1993).

Even if there is an indication that there may be reduced binding of a particular radiolabeled HRV receptor preparation reduced binding to HRV; it maintained the ability to bind.

Further, this does not address the ability of the prior HRV receptor ability to bind LFA-1/Mac-1/p150,95

Although applicant in conjunction with the Rothlein declaration distinguish the cloning disclosed in the Tomassini thesis from that relied upon Tomassini et al. (PNAS 86: 4907-4911, 1989); it is clear that the Tomassini thesis as well as the other references clearly teach that the HRV receptor is indeed the receptor for rhinovirus, that the HRV receptor is bound by antibodies that block HRV attachment or binding, and that the HRV receptor can be used as an immunogen to produce an antibody that blocks HRV attachment and binding.

Either it was inherent or expected at the time the invention was made that the HRV receptor identified and characterized by the references had the ability to bind virus and, in turn, would have either the inherent or expected properties of binding LFA-1/Mac-1/ p150,95.

Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112-2113, including 2112.01.

Also, see Mehl/Biophile International Corp. V. Milgraum, 52 USPQ2d 1303 (Fed. Cir. 1999); Atlas Powder Co. V. IRECO, 51 USPQ2d 1943 (Fed. Cir. 1999).

For example, Atlas Powder Co. V. IRECO, 51 USPQ2d 1943 (Fed. Cir. 1999) states:
"Artisans of ordinary skill may not recognize the inherent characteristics or functioning of the prior art... However, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer. " The Court further held that "this same reasoning holds true when it is not a property but an ingredient which is inherently contained in the prior art".

The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See MPEP 2144.

While the LFA-1/Mac-1/p150,95 binding of the HRV receptor was not disclosed; the prior art need not disclose a newly discovered property in order for a prima facie case of obviousness. If the claimed and the structurally similar prior art species share a useful property, this will generally be sufficient to motivate an ordinary artisan to make the claimed species. See MPEP 2144.06 , including MPEP 2144.06 4(d).

Therefore, the prior art did not need to rely upon the binding of LFA-1/Mac-1/p150,95, as currently claimed. Clearly, the prior art teaching of the HRV receptor would have either the inherent or expected properties of binding LFA-1/Mac-1/p150,95; given its ability to bind HRV.

With respect to the recitation of "artificial" does not appear; the patentability of a product does not depend on its method of production. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

Applicant's arguments are not found persuasive.

15. No claim is allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Gambel whose telephone number is (703) 308-3997. The examiner can normally be reached Monday through Thursday from 7:30 am to 6:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (703) 308-3973. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 305-3014.

PHILLIP GAMBEL

Phillip Gambel, PhD.
Primary Examiner
Technology Center 1600
December 14, 2000